DESIGNING USER INTERFACE CHINESE LEARNING APPLICATION USING GOAL DIRECTED DESIGN

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Abstract- Chinese is a language that comes from China that has been widely used by people. Chinese is also one of the important languages in the future. Therefore, it can not be denied if now Chinese becomes the most interesting language to be studied. For learning Chinese is not enough just to read books and to attend the class, because when learning Chinese, we need attention and practice on pronunciation and tone intonation and also on how to write Chinese stroke order. In this study, Chinese learning application will use animal names for its vocabulary. The target users of this application are children at the ages of 8-12, with the aim of being able to understand and pronounce the vocabulary of animal names in Chinese. Goal directed design method is used to design user interface in this application.

Keywords- Chinese, Goal Directed Design Method, Learning Application, User Interface.

I. INTRODUCTION

According to Indonesian Dictionary, language is an arbitrary system of symbolic sounds, used by members of a society to cooperate, interact, and self-identify [1]. Every country has its own official language. To be able establishing communication with other countries, it needs an intermediary language which is called as international language. International language is a language that has been known or used throughout the world. One of them is Chinese.
Chinese is a language that comes from China that has been widely used by people around the world. Based on the British Council report, Chinese is one of the top 10 important languages in the future [2]. Therefore, it can not be denied if now Chinese is one of language that is interesting to be studied.

Chinese is one of the compulsory language subject in the private elementary school in Indonesia. It is not enough to learn Chinese only by attending the class and reading a book. Indeed, it needs to practice pronunciation because in Chinese using tone intonation to differentiate each words. Besides that, to write Chinese characters, we need follow the rule that is stroke order. The existence of additional learning media such as applications which have features to listen Chinese repeatedly, to learn how to write Chinese stroke order, will be able to help someone better in learning Chinese than only learning conventionally by attending a class or reading a book.

Recently, the smartphones are used widespreadly. Smartphone users are not only adults, but also children. This is reinforced with a survey conducted by the National Consumer League, where 56% of children at the ages of 8-12 have owned a smartphone [3]. In addition, today there are also many applications that provide learning Chinese, but sometimes users still find it is difficult to use the application, or not accommodate their needs. This may result users will not be interested to use the application. To resolve that, we need to consider the user needs either their goals or their experience while using this application. User interface is one aspect that must be considered. If users get a good experience and the users goal can be achieved through this application, then the application will be widely used.

This study will focus on designing user interface by using Goal Directed Design. Goal Directed Design is a method used to design user interfaces that can support users to use the application. The method focuses on (1) the purpose and needs of users; (2) attention to user behavior, comfort, and satisfaction; (3) consider tasks that should be in the application and performed by the user; and (4) has complete documentation [4].

II. THEORY OF GOAL DIRECTED DESIGN

Goal Directed Design was developed by Alan Cooper. It is one of the methods used to design a user interface that focuses on the purpose and needs of users in using an application, so that users will feel happy, satisfied, easy and interested to use it, et cetera. The result of a good interface experience is willingness of user to use the application continuously and increasing the number of user application. In Goal Directed Design method there are 5 stages, those are [5]:



Fig. 1. Goal Directed Design Process [6]

2.1 Research

Research stage is the initial stage in this study. In this stage the study will focus on collecting data about potential users or actual users. Data collection can be obtained by observation, interview, or questionnaire. In collecting data, it may also include competitive product audits, market research and technology reviews, and direct interviews with stakeholders, developers, or people skilled in a particular field.

The main result of interviews and observations is to know a set of behavioral patterns that arise. These patterns indicate the specific or general purpose and motivation of the user in using product which will be used in creating persona in the modeling stage.

2.2 Modeling

In this stage, analysis of the data obtained from the previous stage will be done. In data analysis, the designer uses a variety of tools to synthesize, compare, and map various user behaviors to eliminate duplicates. So that will be generated model persona, such as user behavior, features desired, et cetera. Design targets are specifically selected from the persona that has been elaborated through comparison and priority.

2.3 Requirements Definition

This stage is the stage of defining needs that needed by the user in the form of scenario. Personas provide an understanding of which tasks are truly important and why, leading to an interface that minimizes necessary tasks (effort) while maximizing result. Therefore, in this stage the analysis from the previous stage is needed. Scenarios used is context scenario that describe the persona in using the products in daily life.

2.4 Framework Definition

In this stage, the study will focus on designing the overall product concept, creating a basic framework for product behavior, visual design, and where possible in physical form. In this stage, the designer performs the framework interaction analysis by using visual tools, such as generating system architecture, hierarchy of the system, so as to show the related parts according to the context scenario that has been made in the previous stage. The result of this stage is to produce a stable design concept.

2.5 Refinement

The refinement stage is similar to the framework stage, but at this stage the design implementation is done in more detail in each component of user interface created, such as giving the type and size of fonts, icons, and other visual elements that can provide a compelling experience with clear results.

III. IMPLEMENTATION OF GOAL DIRECTED DESIGN METHOD

The following is a workflow diagram in this study.

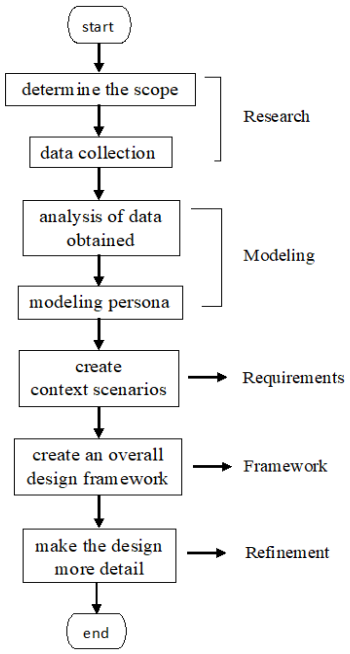


Fig. 2. Workflow Diagram

3.1 Research

3.1.1 Determine the scope

The following are the scope in this research.

1. The design of this user interface focuses on children at the ages of 8-12.
2. The content of material using animal names as the vocabulary.

3.1.2 Data Collection

In this stage, data collection was done by distributing questionnaires to the participants. The participants are 30 students of Saint John's school at Jakarta and Zhongwen Buxi tutoring institution at Alam Sutera. The questionnaire contained the questions of what difficulties they had while learning Chinese, how they learned Chinese, what is their goal when using the Chinese learning application, desirable features, and et cetera. In addition, interviews were also conducted. The interviewees are the Chinese teachers of the Rainbow Star tutoring institution at Gading Serpong. In the interview, questions are more directed to how the teacher usually teaches Chinese, how to know the progress of learning a child, and et cetera.

3.2 Modeling

3.2.1 Analysis of data obtained

The following are pictures of the percentage of data that has been obtained.



Fig.3. data percentage of difficulties in learning chinese

Based on the percentage picture above (Fig. 3.), the order of their difficulties in learning Chinese are (1) write stoke order in Chinese characters; (2) remember vocabulary; and (3) know the correct intonation and pronunciation of the tone.

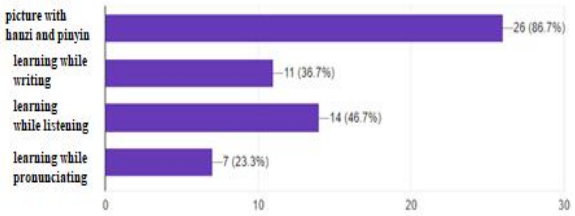


Fig.4. data percentage of learning method that they like

Based on the percentage picture above (Fig. 4.), when they learn Chinese especially vocabulary, the order of learning methods they like and can make them interested are: (1) the provision of writing in the form of Chinese characters and pinyin equipped with picture; (2) learning while listening to the vocabulary pronunciation; (3) learning while writing the vocabulary; and (4) learning while pronunciating the vocabulary.

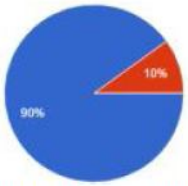


Fig. 5(a). learning while listening repeatedly

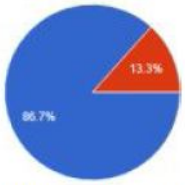


Fig. 5(b). learning while writing repeatedly

Based on the picture above (Fig. 5(a) and Fig. 5(b)) shows that 90% of 30 respondents will understand quicker, if they learn while listening to pronunciation, and 86,7% of 30 respondents will understand quicker, if they write Chinese characters repeatedly.

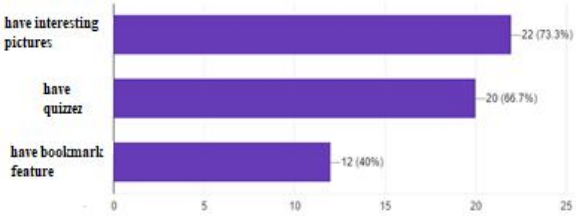


Fig. 6. data percentage of features that they want

Based on the picture above (Fig. 6.), if there is a vocabulary application of animal names in Chinese, the order of features they want are (1) have interesting pictures; (2) have quizzes; and (3) have bookmark feature.

3.2.2 Modeling persona [7]

The following are persona model based on the result of data analysis.



Fig. 7(a). Model Persona

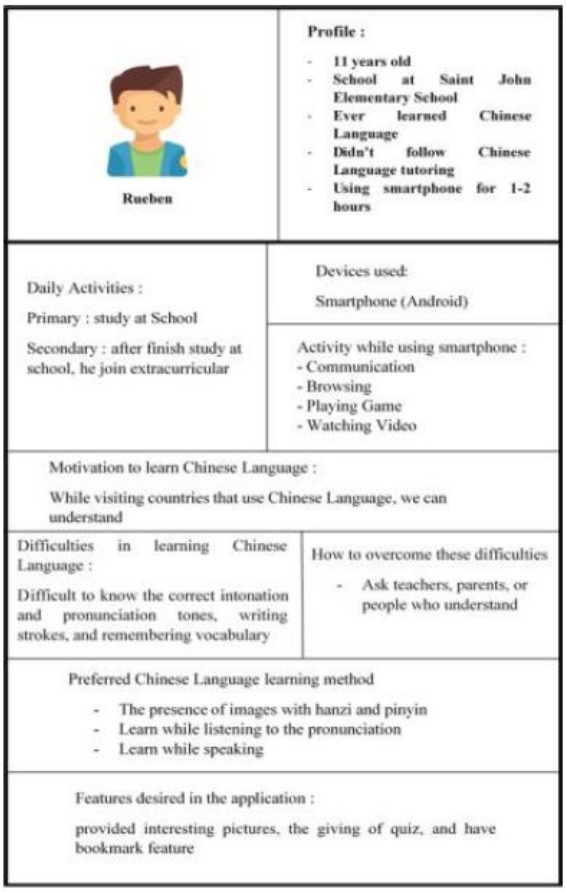


Fig. 7(b). Model Persona

Based on the image above (Fig. 7(a) and Fig. 7(b)), it can be seen that the two personas have different characteristics, such as their motivation, their preferred learning method, and others. But, have the same difficulty in learning Chinese.

3.3 Requirements Definition

In creating context scenario, it will use a fictitious name to represent persona. The fictitious name used is Andre. The following are the needs that have been obtained from the previous stage.

1. The desired features are giving pictures, have quizzes, and have bookmark feature.
2. There are provided for learn listening and write strokes order.

The following is the context scenario provision of pictures feature.

Today, teacher teaches the students the vocabulary of animal names in Chinese. This is the first time Andre studies the vocabulary of the animal's names, and he finds it difficult to follow the lesson because his knowledge of animal forms is still limited. Andre is embarrassed to ask teacher, and afraid of being teased by his friends. Therefore, when Andre arrives at home, Andre looks for an application that teaches vocabulary animal names that comes with animal pictures, then Andre downloads the application. When finished downloading it, Andre opens the app, then presses the "learn" button, and selects "land animal". After that, the application displays a list of land animals, where there are images of land animals provided with pinyin and Chinese characters. Andre is happy using the application because he can learn easily.

The following is context scenario for listening and writing

After school was over, Andre hurries go home. As usual, Andre is a diligent child, he often repeats the lessons he learned that day. Andre wants to try to review the vocabulary of animal names in Chinese, and he finds it is difficult to read the vocabulary, he does not know how to read it correctly. Andre takes his smartphone, and opens the vocabulary contents animal names that he downloaded yesterday, Andre chooses the "learn" button, then chooses the "land animal" button. After that, Andre presses the button that has the animal image of "dog", and the application directly connects to the learn listening page, then the voice of the dog vocabulary pronunciation that says "gou" can be heard. Because Andre still can not say the word "gou" correctly, then Andre presses the button "repeat" logo to listen again until Andre can pronounce it correctly. After open listening part, Andre wants to learn how to write strokes order, Andre also choose the "learn listening" button located next to the "learn stroke order" button, and the application directly connects to the learn stoke order page. On the page, there is a video provided button "play" logo that can stop and resume the video. After Andre finished seeing the Chinese strokes order, Andre also sorts the Chinese characters. In the end, Andre is happy because by accessing listening part and writing strokes order repeatedly, Andre can memorize the vocabulary.

The following is context scenario of bookmark feature.

Today Andre has a free time. Therefore, Andre wants to repeat the Chinese course about vocabulary of animal names. Andre tries to remember that vocabulary of animal names, but he still forgets some vocabulary that he had previously found it difficult to remember. Andre took his smartphone. Yesterday Andre had given a marking on the vocabulary that he still found it hard to remember by pressing the "star" button, and the vocabulary was instantly saved to the bookmark list. To see the list of vocabulary he has tagged, Andre opens the application and presses the "bookmark" button. Then, the application displays list of vocabularies that have been marked by Andre. Andre can also easily repeat the study of all the vocabulary contained in the list.

The following is context scenario of quiz feature.

Today the basketball extracurricular activity starting time is delayed for an hour. Andre wondered what he can do during this waiting time. Andre remembered, tomorrow there is a Chinese exam about vocabulary of animal names. Andre wanted to test whether he is ready to face that exam or not. Andre rushed to retrieve his smartphone, he remembered in his smartphone there is a vocabulary application of animal names that provide quiz features. Andre opens the application, then presses the "quiz" button, and there are 3 quiz options: "listening", "stroke order", and "vocabulary". Andre also worked on the quiz one by one. When finished, Andre looks very happy because he can answer it very well. Andre was ready to take the test tomorrow.

3.4 Framework Definition

After create context scenario, in this stage create the basic structure of overall application is created. The following is an overview of the hierarchy of application created.

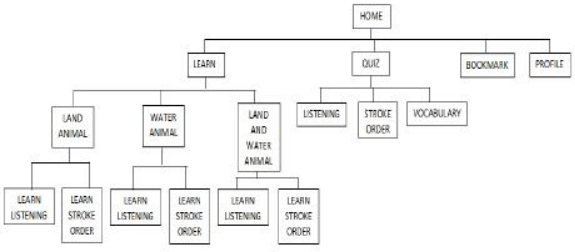


Fig. 8. hierarchy application structure

3.5 Refinement

In this stage is the design implementation of the previous stage in real form. The following is an overview of the user interface for the application that is created.

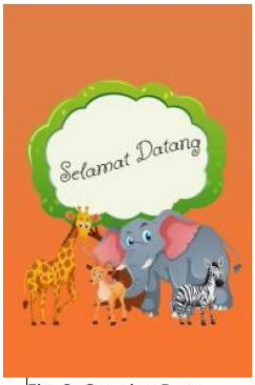


Fig. 9. Opening Page



Fig. 10. Home Page



Fig. 11. Animal Category Page



Fig. 12. Animal Search Page



Fig. 13. Listening Page



Fig. 14. Chinese Stroke Order Page



Fig. 15. Quiz Page



Fig. 16. Listening Quiz Page



Fig. 17. Vocabulary Quiz Page



Fig. 18. Stroke Order Quiz Page



Fig. 19. Bookmark Page



Fig. 20. Profile Page

CONCLUSION

After designing user interface, user interface design is tested. Test results found that most users are just confused with the “repeat” button logo. Therefore, performed repairs on the “repeat” button. The following is an overview of improved user interface design.



Fig. 21. Improvement “repeat” button

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